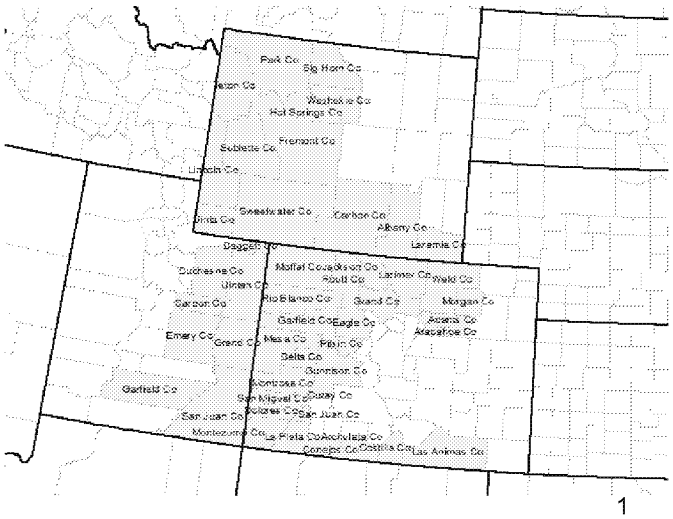
Three State Air Quality Pilot Study

- Motivated by increasing impacts of oil and gas development on air quality in the 3-state region.
- Includes three components:
  1. Monitoring
  2. Regional modeling
  3. Data warehouse to store and share monitoring and modeling results.

Preliminary 3SAQS Analysis Domain



3-State Study Ambient Monitoring Goals

- Design Recommendations for the Three-State Pilot Study Monitoring Component:
  1. Collect and use data to better characterize existing air quality, particularly with regard to ozone.
  2. Establish baseline conditions and evaluate trends in ambient air quality.
  3. Evaluate model performance.
  4. Increase understanding of air quality impacts of oil and gas activities, including by improving emissions inventories.
- Limited monitoring data was available in rural and remote areas to support model performance evaluations in 2008 and earlier studies.

ED_002666A_00001052-00002

Six sites selected for 2010-2013

Site Name	Monitoring Objectives	Siting Characteristics	Parameters	Other Comments
Hiawatha, WY	Provide spatial coverage. Establish baseline concentrations near planned large, dense oil and gas development.	Downwind of the development unless an emissions-dominated site is needed.	Ozone, surface meteorology	Anticipate emissions from areas different than Little Snake. Depending on proximity to emissions, NO_y (not close to emissions) or VOCs (close to emissions) would be valuable. Added methane/nonmethane analyzer with VOC speciation to existing Wamsutter Site.
Fruitland, UT	Characterize transport into basin from Wasatch front. Understand extent of wintertime ozone in the basin. Establish baseline.	Upwind of emissions.	Ozone, NO_x	When ozone is high, the basin is in stagnant conditions/tight inversion and thus NO_x is of more interest than NO_y. Add surface meteorology.
Price, UT	Provide regional view and extent of wintertime ozone in the basin.	Higher on the ridges east of Price, UT.	Ozone, NO_x, surface meteorology	
Escalante, UT	Characterize long-range transport into study area. Serve as background site.	Away from sources.	Ozone, surface meteorology	NO_y was suggested for this site but it was decided that it was too expensive to justify at this time.
Maybell/Little Snake, CO	Provide spatial coverage of Little Snake oil and gas lease area. Establish baseline measurements.	Near development.	Ozone, NO_x, surface meteorology	Anticipate emissions from areas different than Hiawatha, likely in a different airshed.
Walden, CO	Monitor drainage from North Park. Characterize potential cold pool/high winter ozone (some gas development and more planned).	Representative of basin.	Ozone, NO_x, carbon monoxide (CO), carbon dioxide (CO_2), sulphur dioxide (SO_2), PM_{10}	Unknown ozone levels. Add surface meteorology.

Added VOC canister sampling in Wamsutter, WY

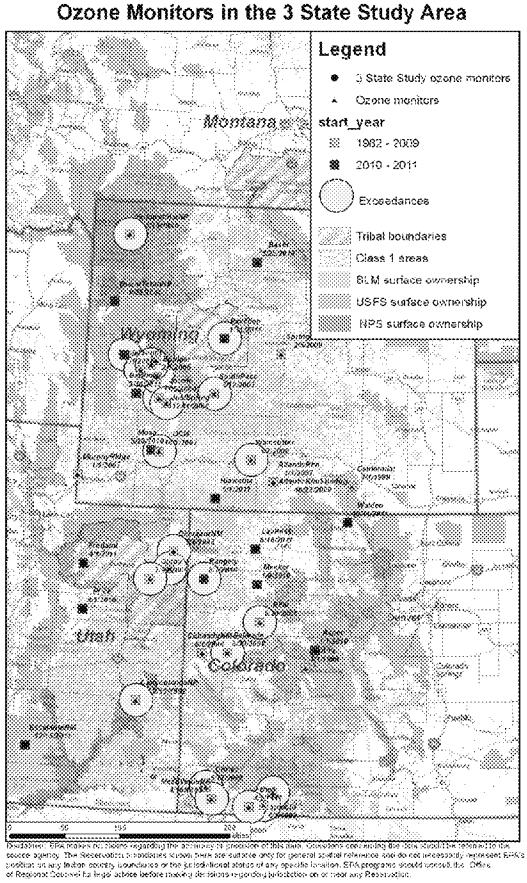
ED_002666A_00001052-00003

Current Monitoring Network

- 3SAQS sites began operation in 2010 or 2011.
- Funding for current monitoring will end in 2013.
- Funding for 2010-2013 monitoring was $1.3 million.

- Discontinued monitors include OCI#4; Atlantic Rim; Jonah, Pavillion
- AQD has also added a "mobile trailer" for a 1 year period in Rock Springs, beginning in March 2013 that has ozone.

Ozone Monitors in the 3 State Study Area



3SAQS Monitoring Network Workgroup

- Goals:
  - analyze the current 3-State network data collected by all the 3-State Cooperating Agencies for the 3-State Study area and surrounding region,
  - determine what sites and parameters should be monitored for the 2014-17 time period.
- Contractor assistance from ENVIRON, funded by NPS:
  - Till Stoeckenius is preparing a network assessment.
- Workgroup meetings 6/20 and 9/17/13. Members include:
  - Patrick Barickman, **UT**; Gordon Pierce, Gregory Harshfield, **CO**; Cara Keslar, **WY**; Terry Svalberg, Debbie Miller, **USFS**; Charis Tuers, Chad Meister, Leonard Herr, Forrest Cook, **BLM**; Mike Barna, Mike George, **NPS**; Gail Tonnesen, Rebecca Matichuk, Vanessa Hinkle, **EPA**;
- Recommendations for 2014 monitoring by October 2013.

ED_002666A_00001052-00005

Questions for the Workgroup

- Which monitoring sites should continue operation, and is there a need for monitors at other locations?
- Should we continue to focus primarily on ozone, and should there be an emphasis on particular seasons?
- Is additional monitoring of ozone precursors also needed?
- What level of funding is needed to continue operating the network?

ED_002666A_00001052-00006